CLAIMS

1   1. A magnetic-ring structure comprising at least two states and at least one twisted state

2   that includes a 360° domain wall that can exist over a wide range of applied fields.

1   2. The magnetic-ring structure of claim 1, wherein said at least two states comprise at

2   least one onion state.

1   3. The magnetic-ring structure of claim 1, wherein said at two states comprise at least

2   one vortex state.

1   4. The magnetic-ring structure of claim 1, wherein said at least one twisted state

2   comprises two states.

1   5. The magnetic-ring structure of claim 1, wherein said at least one twisted state

2   comprises four states.

1   6. A magnetoresistive readback mechanism for retrieving magnetic information

2   comprising:

3   a spacer layer;

4   a pinned magnetic layer that is coupled to said spacer layer;

5   a magnetic storage layer that is coupled to spacer layer that includes a magnetic-

6   ring comprising at least two states and at least one twisted state that includes a 360°

7   domain wall that can exist over a wide range of applied fields.

1   7. The magnetoresistive readback mechanism of claim 6, wherein said at least two states

2   comprise at least one onion state.

1   8. The magnetoresistive readback mechanism of claim 6, wherein said at two states

2   comprise at least one vortex state.

1   9. The magnetoresistive readback mechanism of claim 6 wherein said at least one

2   twisted state comprises two states.

1   10. The magnetoresistive readback structure of claim 6, wherein said at least one twisted

2   state comprises four states.

1   11. The magnetoresistive readback structure of claim 6 further comprising an

2   antiferromagnetic structure.

1   12. A method of operating a magnetic-ring structure comprising:

2   providing said magnetic-ring structure with at least two states; and

3   providing at one twisted state that includes a 360° domain wall that can exist over

4   a wide range of applied fields.

1   13. The method of claim 12, wherein said at least two more states comprise at least one

2   onion state.

1   14. The method of claim 12, wherein said at least two states comprise at least one vortex

2   state.

1   15. The method of claim 12, wherein said at least one twisted state comprises four states.

1   16. The method of claim 12, wherein said at least one twisted state comprises two states.